I claim:

1. A radio frequency transmitting method for the transmission of digital data, comprising:

abrupt phase shift keying the digital data; and

filtering the data digital with a bandpass filter having essentially no group delay.

2. The method of claim 1 where the abrupt phase shift keyed digital data results in a carrier bearing phase shift information and removable Fourier sidebands, which do not contribute to the phase modulation angle.

3. The method of claim 2 where filtering the phase shift keyed digital data reduces the modulation sidebands, which are Fourier amplitude modulation products only.

4. The method of claim 1 where the phase shift keyed digital data has a carrier and Fourier sidebands, and where abruptly phase shift keying the digital data inserts substantially all necessary phase modulation information into the carrier alone with an insubstantial amount of any necessary phase modulation information inserted into the Fourier sidebands.

5. The method of claim 1 where abruptly phase shift keying the digital data comprises phase shift keying the digital data in the NRZ format.

6. The method of claims 1 or 5 where any two phase baseband format or code is employed to abruptly phase shift the carrier.

7. Receiving means for the method of claim 1, further comprising reducing the noise bandwidth with an ultra narrow bandpass filter, detecting abrupt phase changes, and decoding the detected abrupt phase changes into digital ones and zeros along with a corresponding data clock.

8. The method of claim 7 where the abrupt phase shift keyed digital signal does not have a Nyquist bandwidth resulting from Bessel products and wherein reducing noise bandwidth with an ultra narrow bandpass filters comprises using a filter having a bandpass narrower than the Nyquist bandwidth of the phase shifted keyed digital data so that information encoded in the phase changes in the digital data is found in the carrier alone.

9. The method of claim 7 where the abrupt phase shift keyed digital signal does not have a Nyquist bandwidth and wherein reducing the noise bandwidth with ultra narrow bandpass filters comprises using a filter having a bandpass narrower than the Nyquist bandwidth of the phase shifted keyed digital signal so that the noise power in the

received phase shifted keyed digital data is greatly reduced compared to that of conventionally generated phase modulated signals.

10. The method of claims 1 or 7 further comprising utilizing abrupt phase change pulses of different phase angles to indicate a digital one or zero.

11. The method of claim 7 further comprising synchronizing a recovered data clock with the received abrupt phase change pulses.

12. A circuit for phase shift keying a digital data signal comprising:

a phase change modulator which abruptly changes phase of the digital data signal; and

an ultra narrow bandpass filter which has a substantially zero group or envelope delay communicating with the phase change modulator to output a bandpass filtered form of the abruptly phase changed digital data signal.

13. The circuit of Claim 12 wherein the digital data signal has a carrier frequency plus sideband frequencies which are not used, and where the ultra narrow bandpass filter and the phase modulator in combination reduce the level of said sideband frequencies.

14. The circuit of claim 13 where the sideband frequencies reduced by the ultra narrow bandpass filter and the phase modulator in combination are Fourier products.

15. The circuit of claim 13 wherein the digital data signal carrier is modulated by the phase change modulator to retain an information content, and wherein the sideband frequencies reduced by the ultra narrow bandpass filter and the phase modulator in combination have substantially no necessary information content, the carrier having substantially all the necessary information content.

16. The circuit of claim 12 where the phase change modulator changes the phase of data according to the NRZ format.

17. The circuit of Claim 12 where the phase change modulator changes the phase of the signal according to any two phase format or baseband code.

18. The circuit of claim 12 further comprising a receiver including an ultra narrow bandpass filter to reduce the noise bandwidth, a limiter, a phase detector to detect the abrupt phase changes, and a decoder to convert the detected abrupt phase changes to digital ones and zeros along with a data clock.

19. The circuit of claim 18 wherein the modulated digital data signal does not have a Nyquist bandwidth and wherein the ultra narrow bandpass filter in the receiver has a

noise bandwidth much narrower than the Nyquist bandwidth, causing the noise power in the receiver to be greatly reduced compared to that of conventionally generated PM signals.

20. The circuit of claim 18 further comprising processing circuitry to provide output pulses of a polarity indicating a digital one or zero.

21. The circuit of claim 20 where the processing circuitry provides pulses processed to provide a phase noise improvement.

22. The circuit of claim 21 further comprising a storage circuit communicating with a phase detector, which storage circuit is set to hold the last change pulse polarity until a new change pulse is received, where the pulse polarity indicates a digital zero or one.

23. The circuit of claim 18 further comprising a clock recovery means to synchronize a recovered data clock with the abrupt phase change pulses received by the receiver.

24. A shunt filter having zero group delay at a single frequency, capable of passing abrupt phase changes without adverse effect, comprising:

a crystal resonator operated in the parallel mode, so as to represent an infinite shunt impedance to the input at the single frequency and a lower finite shunting complex impedance at all other frequencies.

25. The shunt filter of claim 24, wherein the shunt filter has a very narrow noise bandwidth, said bandwidth being much narrower than the Nyquist bandwidth of a abrupt phase change modulated signal it is intended to pass.

26. The shunt filter of claims 24 or 25, further including complex reactances in series or parallel with the resonator whereby the shunt filter is tunable.